

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2005/000678

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01S3/06 H01S3/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, IBM-TDB, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/54970 A (CARL BAASEL LASERTECHNIK GMBH; LANGHANS, LUTZ; RENNER, THOMAS) 28 October 1999 (1999-10-28)	1,3,4,8, 9,15,23, 24,40
Y	pages 1-11; figures 2-6	2,5-7, 10,43
P,X	-& US 6 788 723 B1 (LANGHANS LUTZ ET AL) 7 September 2004 (2004-09-07)	1,3,4,8, 9,15,23, 24,40
	the whole document	
Y	----- US 6 282 223 B1 (ANGELEY DAVID G) 28 August 2001 (2001-08-28) column 1, lines 34-67 column 3, lines 16-61; figures 2,3 column 4, lines 49-64; figure 1 ----- -/--	2,5,10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

9 August 2005

Date of mailing of the international search report

17. 10. 05

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2005/000678

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/086447 A1 (YOUNG EDDIE H ET AL) 8 May 2003 (2003-05-08) paragraphs [0023] - [0025]; figure 1 -----	6
Y	US 6 400 495 B1 (ZAYHOWSKI JOHN J) 4 June 2002 (2002-06-04) column 2, lines 39-67; figure 1 -----	7
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13, 5 February 2001 (2001-02-05) & JP 2000 299520 A (MITSUBISHI HEAVY IND LTD), 24 October 2000 (2000-10-24) abstract; figure 1 -----	16
Y	US 2004/028090 A1 (PASK HELEN M ET AL) 12 February 2004 (2004-02-12) abstract paragraphs [0012], [0087], [0088] -----	17-23
Y	US 2004/028090 A1 (PASK HELEN M ET AL) 12 February 2004 (2004-02-12) abstract paragraphs [0012], [0087], [0088] -----	17-23
X	US 5 351 251 A (HODGSON ET AL) 27 September 1994 (1994-09-27) column 19, line 24 - column 20, line 12; figures 20a, 20b -----	26-31, 33-36, 38 43
Y	US 5 351 251 A (HODGSON ET AL) 27 September 1994 (1994-09-27) column 19, line 24 - column 20, line 12; figures 20a, 20b -----	26-31, 33-36, 38 43
X	US 6 038 241 A (VON ELM ET AL) 14 March 2000 (2000-03-14) abstract column 4, lines 20-47; figure 1 column 11, lines 49-65 -----	25, 41
T	JOHNSTON T F: "M2 CONCEPT CHARACTERIZES BEAM QUALITY" LASER FOCUS WORLD, PENNELL PUBLISHING, TULSA, US, vol. 26, no. 5, May 1990 (1990-05), pages 173-174, 176, 17, XP000996244 ISSN: 1043-8092 pages 176-179 -----	1
A	US 2004/028108 A1 (GOVORKOV SERGEI V ET AL) 12 February 2004 (2004-02-12) paragraphs [0044], [0045], [0060]; figure 1 -----	26-38, 43

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2005/000678

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-10, 15-41, 43
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10,15,23,24,26 -40,43

Claims 1 and 15 define different optical components that are or contain an optically active medium with profiled ends. Claims 24 and 38 define manufacturing methods especially directed to the devices of claims 1 and 36, respectively.

2. claims: 11-14,23,39

Claims 11 - 14, 23 and 39 are directed to a Q-switch having at least one acousto-optical cell.

3. claims: 16,17-23,43

Claims 16, 17 - 23 and 43 are directed to a laser cavity having first and second end reflectors, a gain medium, a frequency-converter and a frequency-selective reflector.

4. claims: 25,41

Claims 25 and 41 are directed to a method of controlling the pumping of a Q-switched pulsed laser comprising the step or reducing the pumping to a sub-threshold level.

5. claim: 42

Claim 42 is directed to a method of converting laser frequency in a laser cavity comprising the step of cooling a frequency-converter to below an optimum frequency-conversion temperature during a non-lasing state of the laser.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2005/000678

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9954970	A	28-10-1999	AT 254813 T EP 0992090 A2 ES 2211088 T3 US 6788723 B1	15-12-2003 12-04-2000 01-07-2004 07-09-2004
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